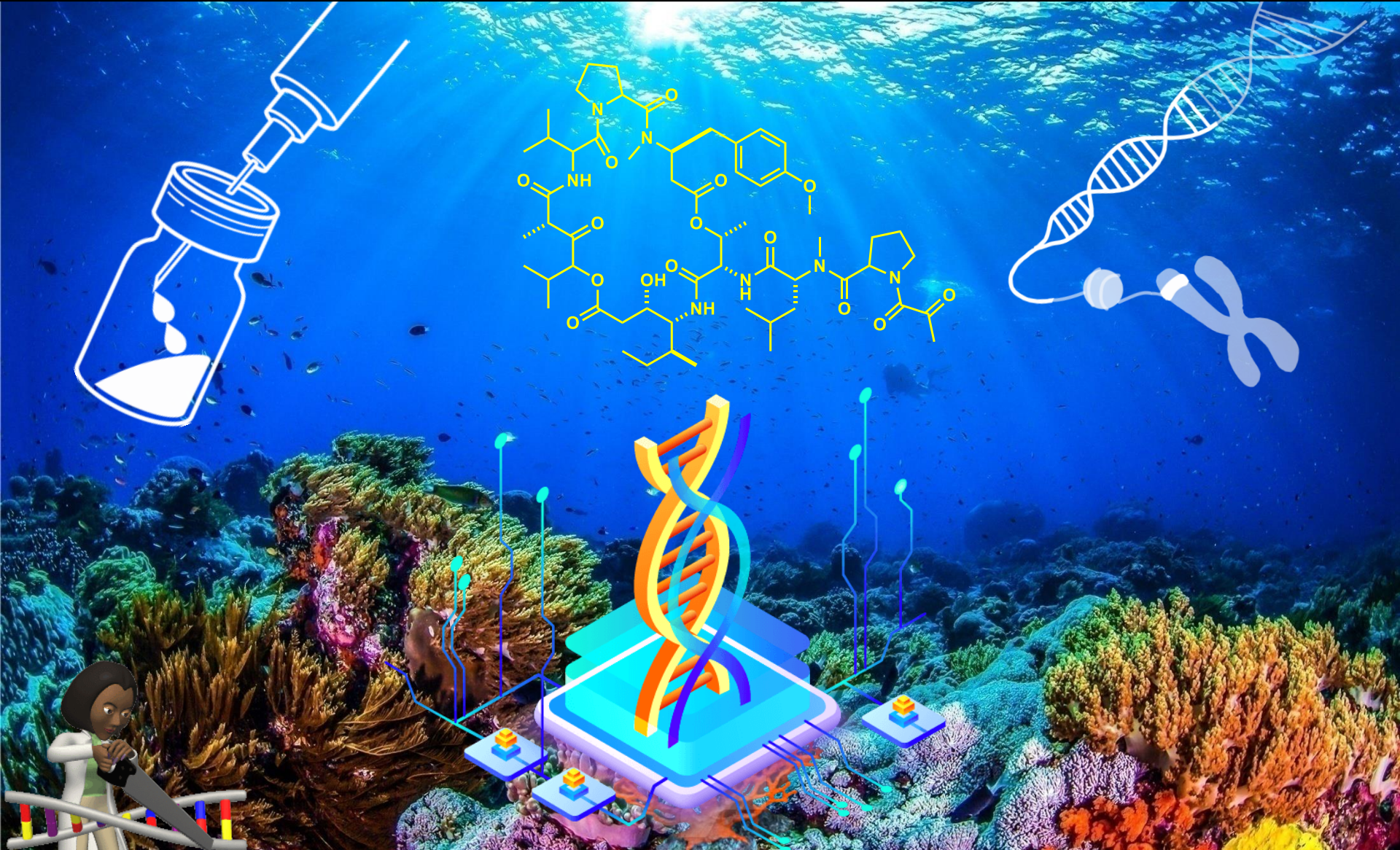


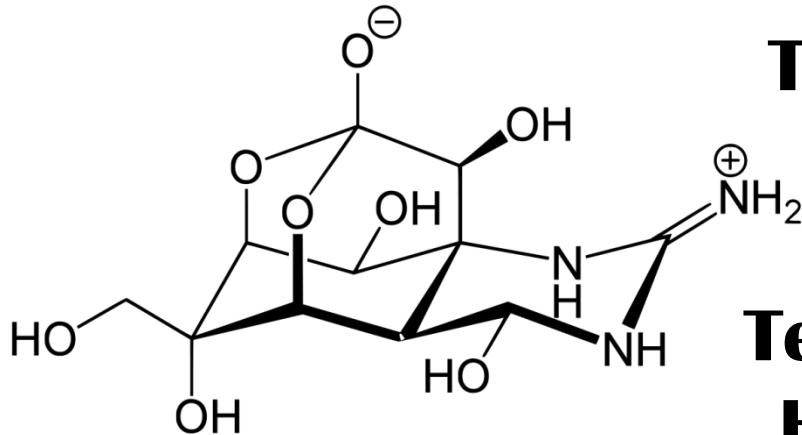
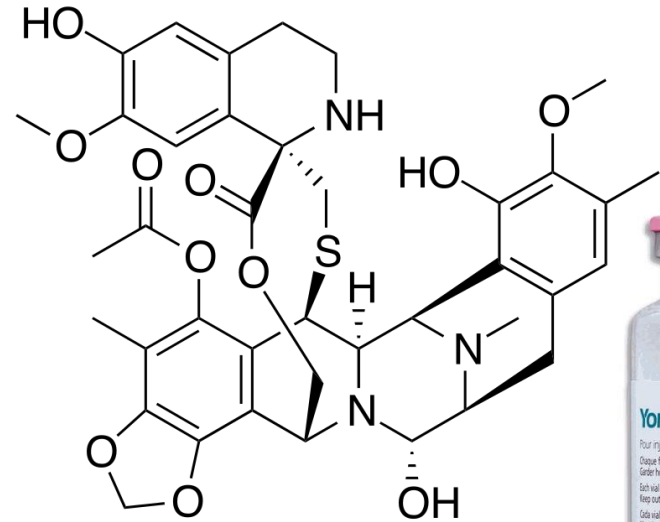
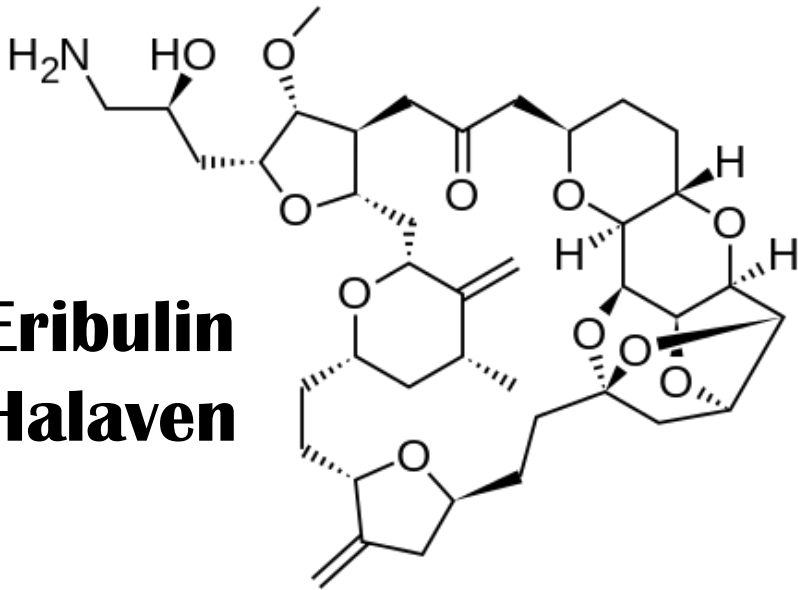
Introduction to Marine Biotechnology



Dr. Omar M. Sabry

Introduction

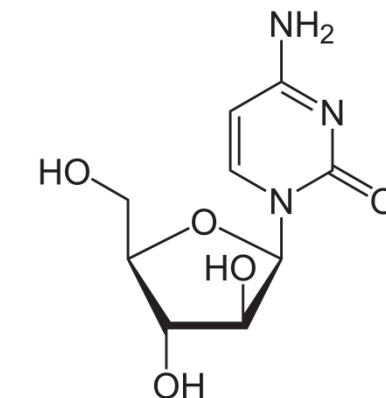
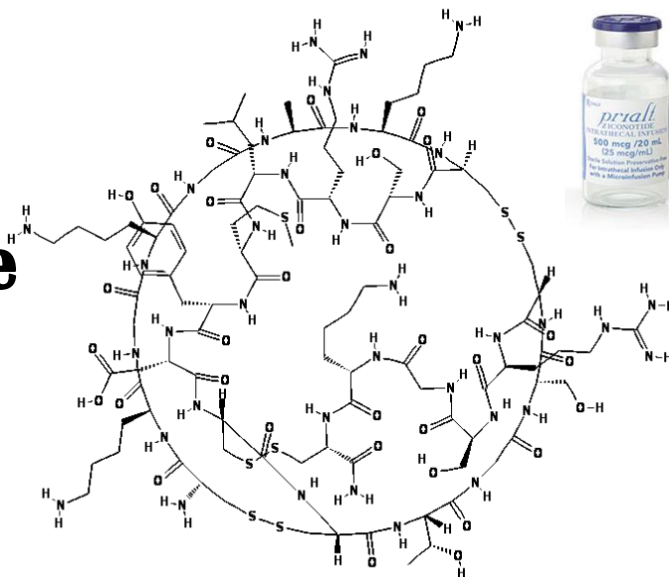
☐ Marine natural resources & chemical diversity



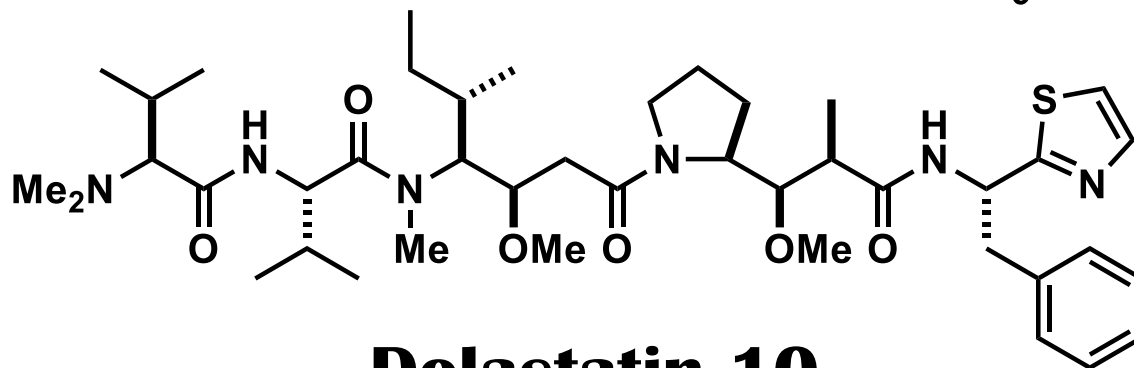
Introduction

□ Marine natural resources & chemical diversity

**Ziconotide
{Prialt}**



**Cytarabine
Cytosar**

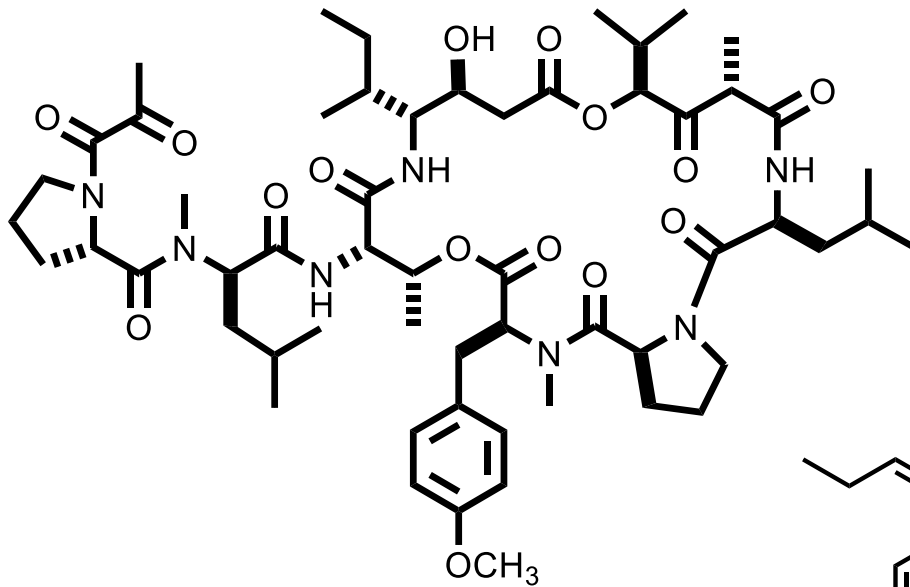


**Dolastatin 10
Brentuximab**

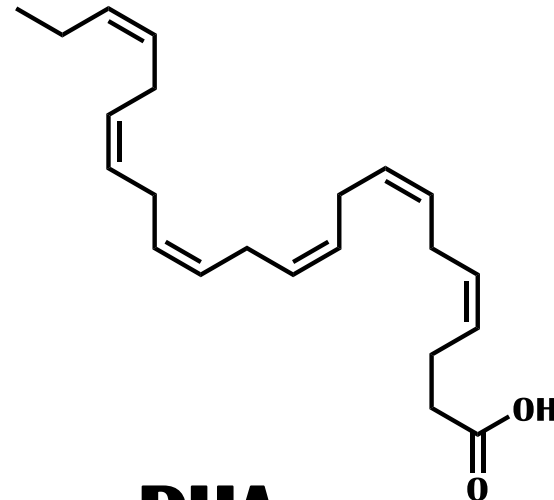


Introduction

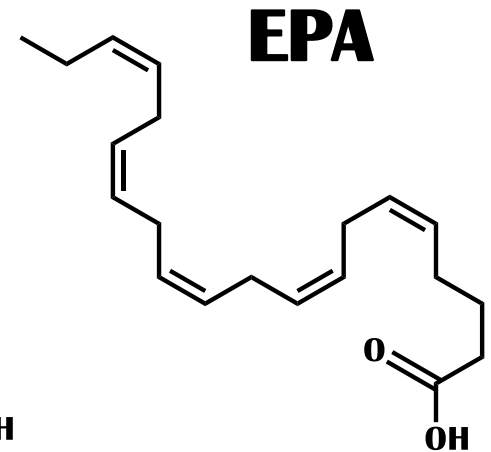
□ Marine natural resources & chemical diversity



Aplidin



DHA

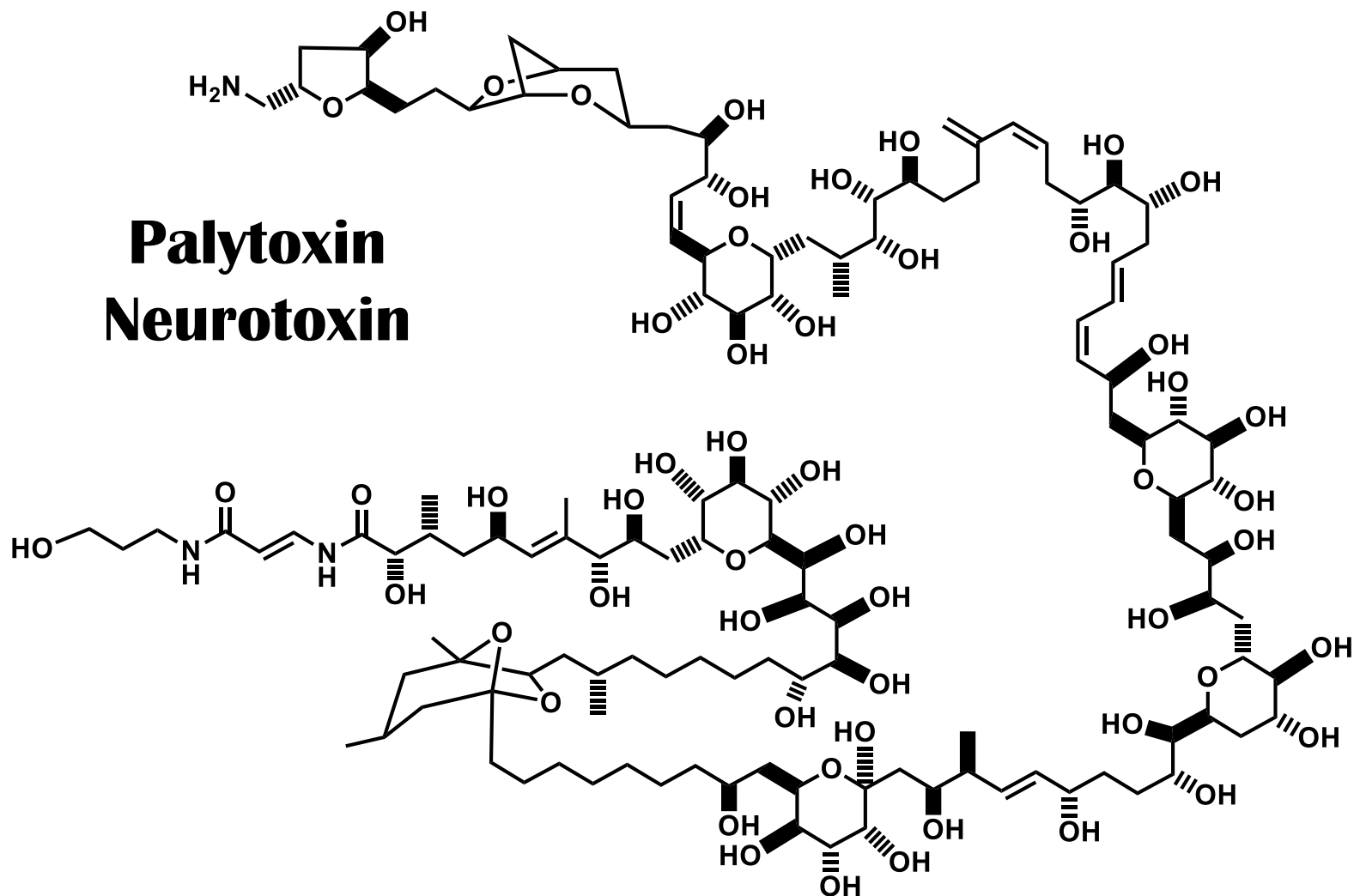


EPA



Introduction

□ Marine natural resources & chemical diversity



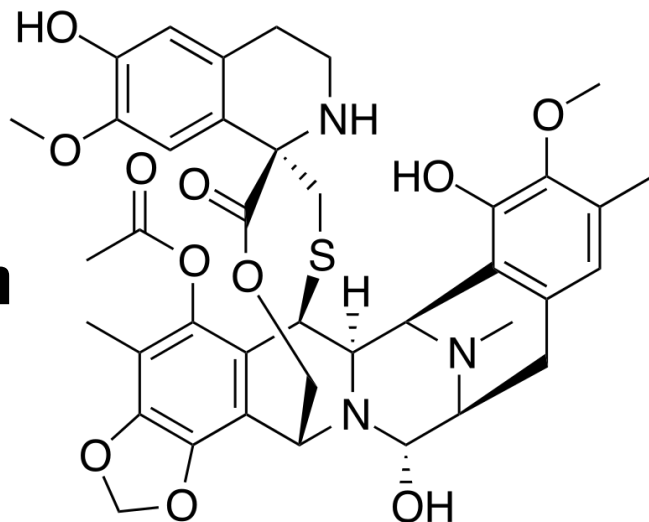
Main Problems in Marine Drug Discovery

Material supply

❑ 29 mg Dolastatin 10 = 1 Ton Nudibranch

❑ 1 gm Trabectedin = 1 Ton tunicate

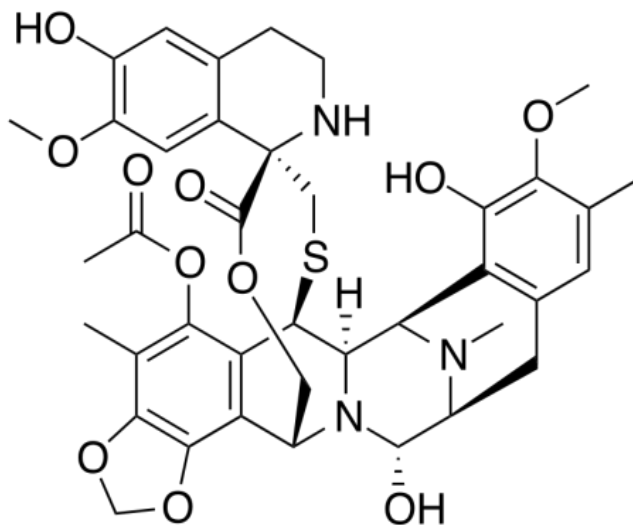
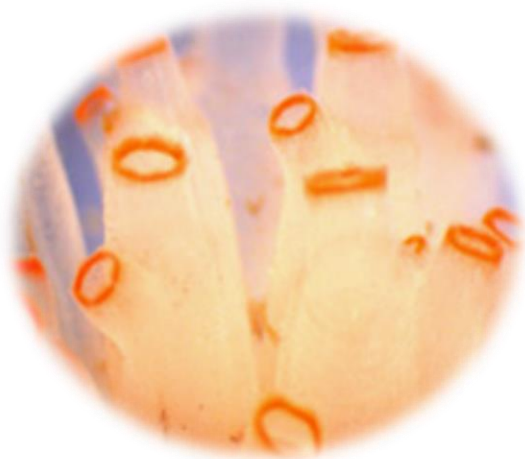
Trabectedin



Alternative sources of rare bioactive natural compounds

1- Aquaculture

❑ *Ecteinascidia turbinata*



Trabectedin



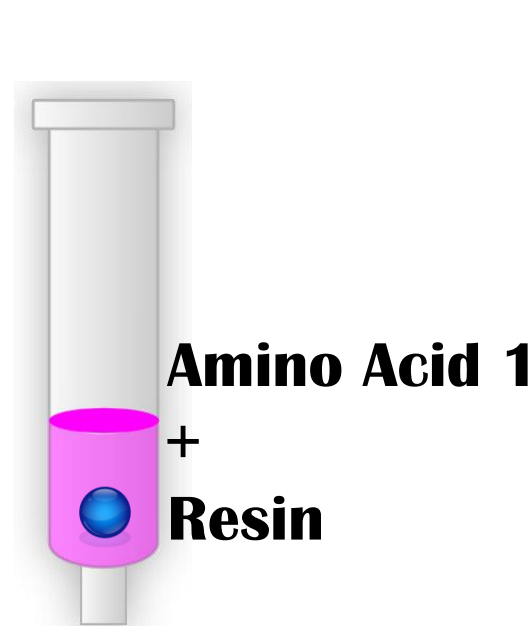
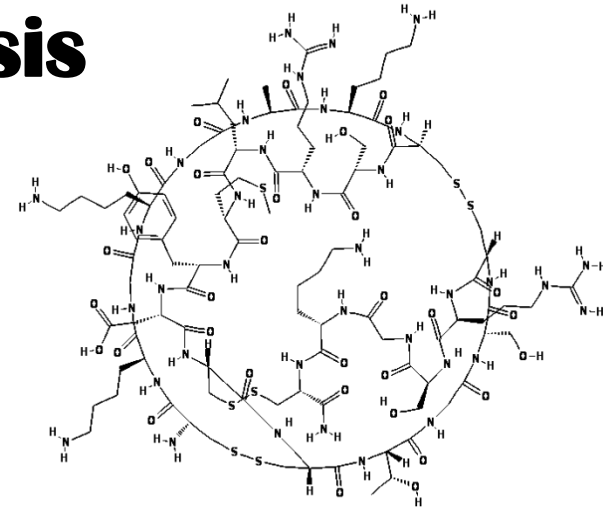
Alternative sources of rare bioactive natural compounds

2- Chemical Synthesis

□ Ziconotide {Prialt}

Amino Acid 1

Amino Acid 2



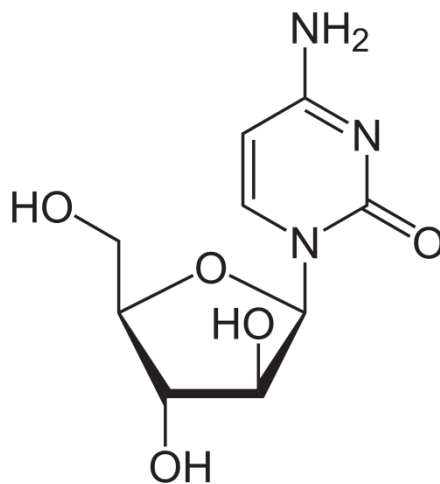
Peptide



Alternative sources of rare bioactive natural compounds

2- Chemical Synthesis

□ Cytosar - ARA C {Total Synthesis}

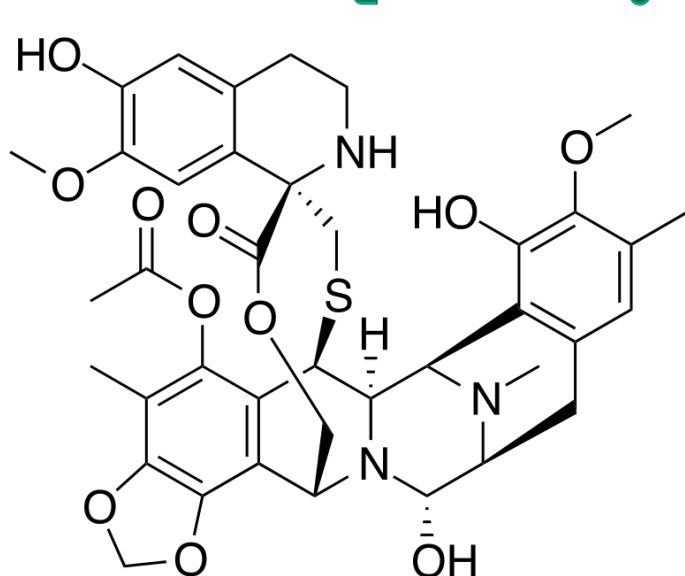


Cytarabine

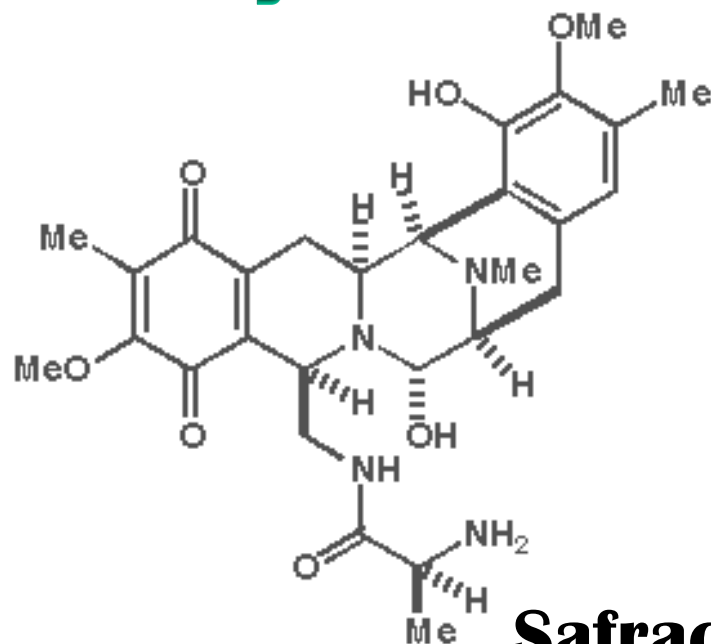
Alternative sources of rare bioactive natural compounds

2- Chemical Synthesis

□ Trabectidin {Semi-synthesis}



Trabectidin

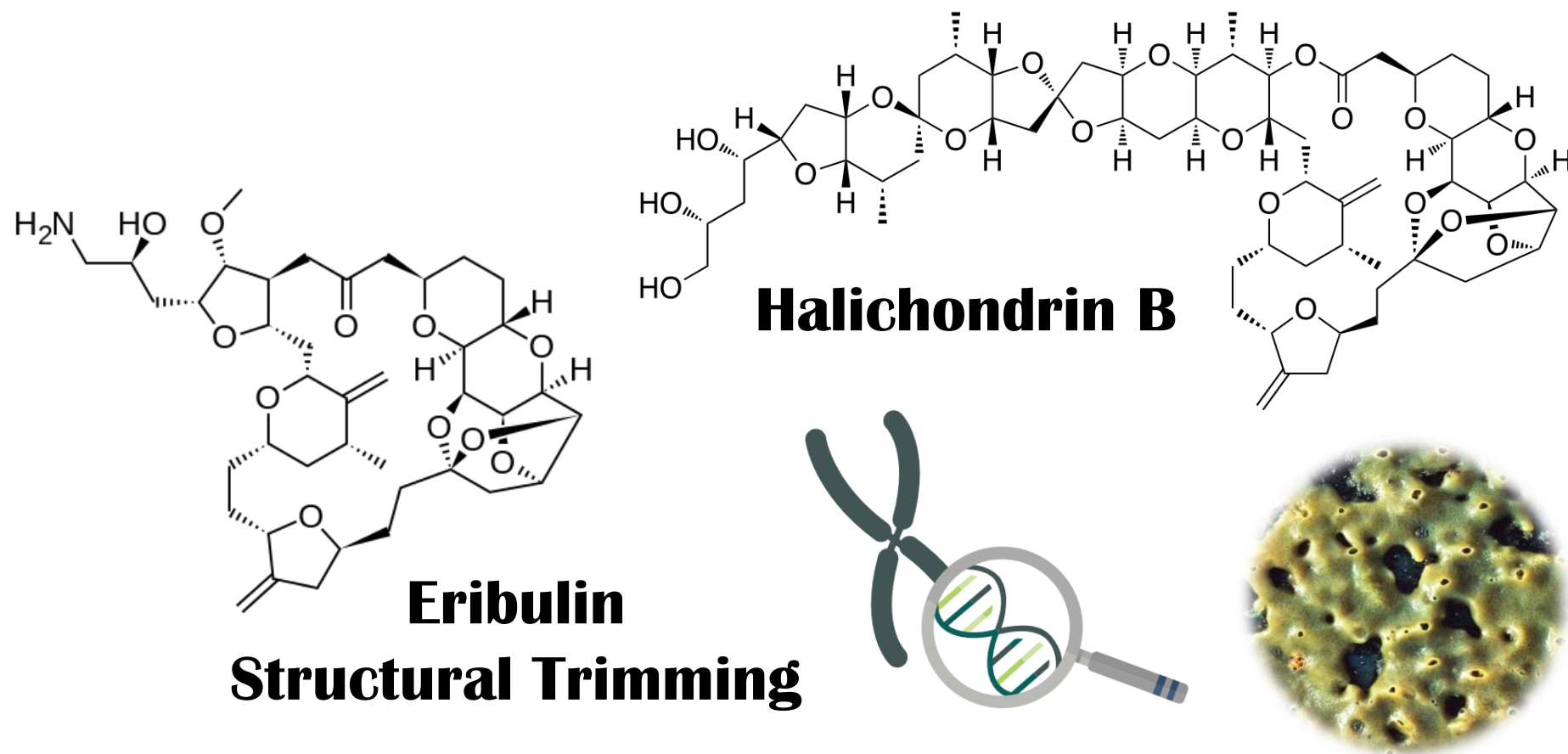


Safracin B
M.O.

Alternative sources of rare bioactive natural compounds

2- Chemical Synthesis

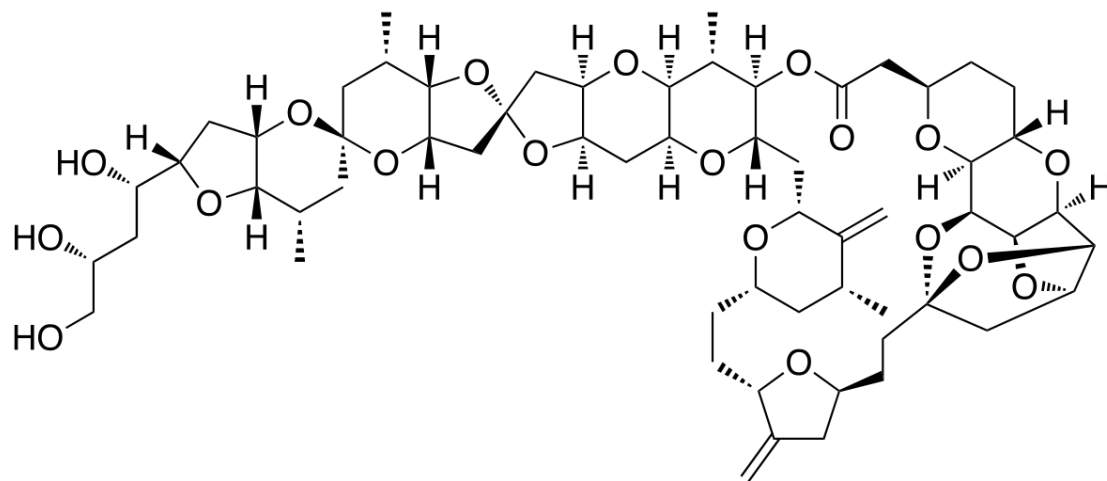
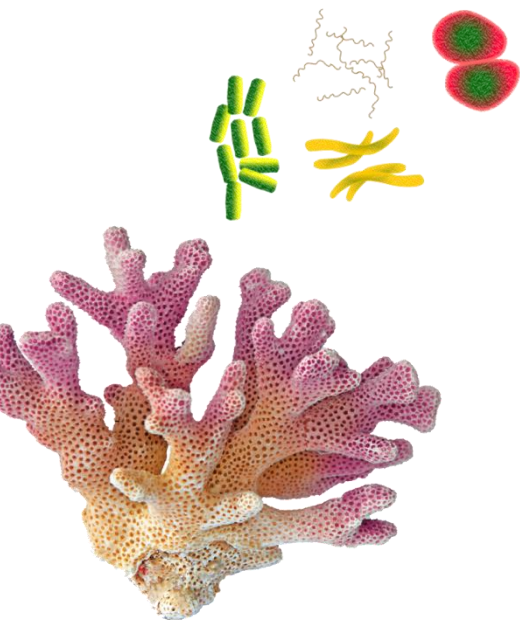
□ Halichondrin {Total Synthesis}



Alternative sources of rare bioactive natural compounds

3- Biotechnology

□ Halichondrin B {True producer Microorganisms}



Halichondrin B

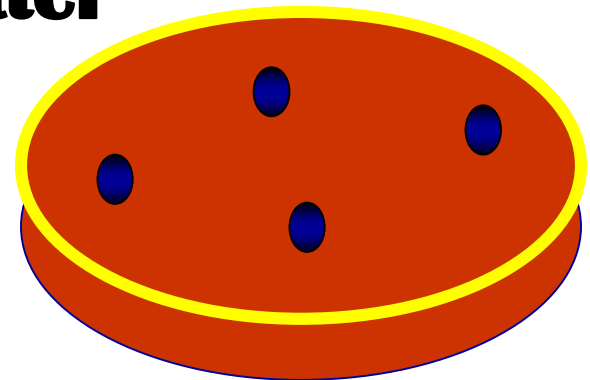
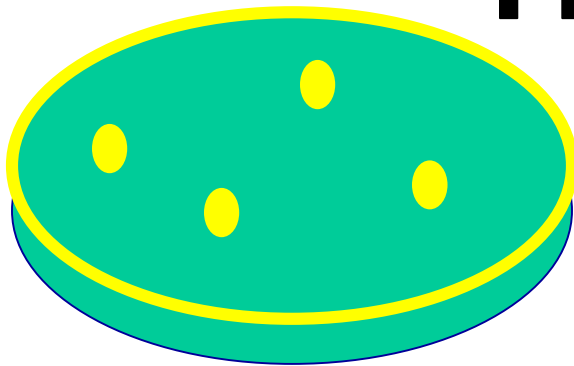
Alternative sources of rare bioactive natural compounds

3- Biotechnology

□ Microbial Culturing

Culturing of Marine M.O

1 ml Sea water



About 0.1% of the Microorganisms grown